# HAWAI'I COMMUNITY COLLEGE ANNUAL INSTRUCTIONAL PROGRAM REVIEW

# TROPICAL FOREST ECOSYSTEM AND AGROFORESTRY MANAGEMENT PROGRAM

**APRIL 2, 2007** 

Marilyn Bader Orlo Steele Pamela Scheffler

# ANNUAL INSTRUCTIONAL PROGRAM REVIEW Tropical Forest Ecosystem and Agroforestry Management Program April 2, 2007

# I. Narrative and Analysis of Data

# a. Statement on the mission or purpose of the program, including the target student population.

The Forest TEAM program is an Associate of Science degree program which is designed to prepare individuals for careers as Ecosystem Management Technicians, which includes work in native forest conservation and restoration, with commercial forest plantations, or with Agroforestry operations. Graduates are prepared for employment with state and federal agencies, the private sector, or to set up their own businesses. Students may also opt to continue with their four-year degree.

TEAM graduates at HawCC are prepared with knowledge and skills for entery-level positions in the fields of plant propagation, forest restoration, forest surveying, agroforestry, and use of GIS in decision making and management.

TEAM students should be able to:

## I. Apply basic eco-system concepts to natural resources.

- A. Acquire knowledge of forest ecology in Hawai'I;
- B. Demonstrate awareness of wildlife population dynamics;
- C. Demonstrate knowledge of natural cycles such as water, carbon, minerals, etc.;
- D. Understand unique Hawaiian ecosystems;
- E. Acquire knowledge of natural disturbances such as hurricanes, volcanoes, and fires;
- F. Acquire basic knowledge of hydrology;
- G. Be familiar with water quality and chemistry;
- H. Understand habitat for aquatic animals;
- I. Be familiar with the geography of the Hawaiian Islands;
- J. Understand edges and corridors;
- K. Conduct an environmental assessment for a specific site;
- L. Understand volcanic geology.

# II. Use an understanding of general science concepts to apply experimental designs.

- A. Complete core courses in science and math; Science courses to include ecology and either botany or zoology;
- B. Apply simple experimental designs;
- C. Analyze simple experimental data.

# III. Use knowledge of applicable laws and regulations to make decisions about managing ecosystems.

- A. Identify applicable regulations;
- B. Comply with regulations;
- C. Communicate with regulatory agencies and/or supervisor;
- D. Apply chemicals in a safe and appropriate manner;\
- E. Able to determine applicability of various laws and regulations to specific projects.

### IV. Apply effective interpersonal and communication skills.

- A. Demonstrate leadership skills;
- B. Be able to write reports, correspondences, etc.;
- C. Be able to work collaboratively as part of a team;
- D. Give effective oral presentations;
- E. Demonstrate computer literacy;
- F. Write a management plan.

### V. Recognize, collect, and interpret field data.

- A. Inventory natural resources;
- B. Demonstrate survey techniques—must include land survey, GPS aerial photo interpretation, data loggers, and assorted survey equipment;
- C. Use GIS and other modeling programs in field analyses;
- D. Interpret GIS and other modeling programs in field analyses;
- E. Produce reports on data analysis (both oral and written).
- F. Analyze and summarize data;
- G. Demonstrate knowledge of field identification methods of plants and animals;
- H. Demonstrate knowledge of an environmental management plan;
- I. Conduct property title search and tax map key search;
- J. Review aerial photo images;
- K. Interpret maps.

### VI. Apply effective management practices to commercial or conservation efforts.

- A. Demonstrate general business skills;
- B. Demonstrated knowledge of integrated pest management;
- C. Be familiar with mensuration and inventory management;
- D. Identify forest restoration principles;
- E. Practice silviculture;
- F. Be aware of tropical agro-forestry practices and products;
- G. Understand the issue of biodiversity;
- H. Prepare and write a management plan for a specific parcel of land;
- I. Be aware of tropical agro-forestry practices.

# b. Information on external factors affecting the program.

In the 1990s, studies of the State of Hawai'i workforce targeted forest and conservation workers as an area with a large potential need and lack of in-state training programs. In response to this and a Secretary of Conservation Biology workshop in 1997, the State of Hawai'i Dept. of Labor's Workforce Development Office and the Hawai'i Community Forestry Initiative provided seed money for Hawaii Community College to develop grant proposals that led to the initiation of the Forest TEAM program.

The strengths of the program are:

- Requires internships with potential employers;
- Produces qualified graduates that are employed in the local community;
- Through articulation agreements with Oregon State University and University of Hawai'i at Hilo, the program provides graduates with opportunities to complete 4-year degrees in natural resources;
- The program is situated in an ideal environment which provides students with the opportunity for hands-on field experience;
- The program has a strong relationship with its Advisory Board, which strengthens the program and provides internship opportunities for students.
- Utilizing the latest technology, the program is distributing its courses throughout the entire island of Hawai`i.

Challenges for the program are:

- Under-prepared students that require remedial/developmental education prior to entering the program, which reduces enrollment;
- Students from other islands find it difficult to relocate to the Big Island.

## c. Attach PHI Report - See attached.

# d. Required external measures, if applicable - Not applicable

## **Analysis of Data**

Although the number of majors experienced a 12% drop from academic year 2004-2005, the number of majors has increased by 19% since academic year 2003 - 2004 and by 95% since academic year 2002 - 2003.

The average class size decreased by 43%, resulting in a substantial drop in average class fit, from 71% to 55%. There was a 35% increase in the number of student semester hours which was likely due to the fact that there were more full-time students in the program (an average of 9.9 credit hours per major in 2004-2005 compared to 15 credit hours per student major in 2005-2006).

The number of FTE faculty decreased by 39% from 2 to 1.33 due to the retirement of Dr. Fred Stone. This lead to an 8% increase in the student: faculty ratio.

Our students did well in the program paid courses (PPC) with a credits earned ratio of 0.95 and an average GPA of 3.33. In non PPC courses the ratio was lower (0.75) as was the GPA (2.49). We are graduating about 22% of our majors.

Our program cost per SSH is \$240.26.

# **II.** Update or Create Your Action Plan including Budget Request with Justification, if needed.

The Forest TEAM Program plans to do the following:

- Continue to expand recruiting through brochure mailings to all public and private high schools statewide. Continue to participate in career fairs at local high schools in the Career Pathways career fairs held in Hilo each year. Continue to visit classes of high school teachers in agriculture and natural resources. Offer two summer Explorations classes to high school students.
- Extend work with the Natural Resources Career Pathways program, targeting teachers on the Big Island schools who are participating in the program
- Send applied TEAM distance education classes to the West Hawai'i campus
- Work with the Advisory Board to continue to meet the needs of employers
- Continue to work with federal and state agencies in service learning and internships
- Complete articulation agreements with UHH, UHM, and OSU

## **Budget Request**

In order to provide instructors with adequate technological teaching tools, the Forest TEAM program plans to equip the laboratory/instructional classroom (Rm 103) with a computer system and peripheral:

1 Elmo	\$2,500
Complete computer system	\$5,000
2 replacement bulbs	\$800
TOTAL	\$8,300

# QUANTITATIVE TREND DATA CHART

## Program Name: Tropical Forest Ecosystem & Agroforestry

	Fall 2005	Spring 2006	AY	
#1 Number of Unduplicated	35	28	37	
Majors				
#2 Total Student Semester	291	270	561	
Hours				
#3 FTE Student Majors	19.40	18.00	18.70	
#4 Number of Graduates	-	-	8	
#5 Number of classes	9	7	16	
#6 Avg Class size	7.00	8.71	7.75	
#7 Avg Class fit	52.7%	58.1%	55.1%	
#8 FTE of BOR Appointed	-	-	1	
Program				
Faculty				
#9 Number of FTE Faculty	-	-	1.33	
#10 Student semester hours for	114	131	245	
all				
PPC class enrollments				
#11 Student-Faculty Ratio	-	-	6.13	
#12 PPC Credits Earned Ratio	.89	1.00	.95	
#13 Non-PPC Credits Earned	.68	.82	.75	
Ratio				
#14 PPC Avg GPA	3.22	3.44	3.33	
#15 Non-PPC Avg GPA	2.35	2.64	2.49	
#16 Budget	-	-	3026.00	
<pre>#17 Program Cost per SSH***</pre>	-	_	240.26	

\*\*\* - calculated using rank 4 rate per credit hour of instruction

#### PROGRAM DESCRIPTION

The Forest TEAM (TEAM) program is placed in the Liberal Arts Division of Hawai'i Community College (HawCC). Other programs within this division include the Associate of Arts (Liberal Arts) program, Administration of Justice, Early Childhood Education, Human Services and Hawaiian Lifestyles . This division, along with the Business Education & Technology Division, the Nursing and Allied Health Division and the Applied Technical Education Division, are organized under the Chancellor who is the chief executive officer for the college.

The Forest TEAM program is an Associate of Science degree program which is designed to prepare individuals for careers as Ecosystem Management Technicians, which includes work in native forest conservation and restoration, with commercial forest plantations, or with Agroforestry operations. Graduates are prepared for employment with state and federal agencies, the private sector, or to set up their own businesses. Students may also opt to continue with their four-year degree.

The Forest TEAM program was established through a grant from the National Science Foundation/Advanced Technological Education division. Therefore, the program is required to have a strong math, science and technology content. Students are required to take the Compass test and test into math 100, English 100 and English 102 prior to taking TEAM courses. Math 120 (Trigonometry for Surveying) and ICS 101 are required courses.

The Forest TEAM program also has a required internship program. Students intern with agencies such as Hawai'i Volcanoes National Park, the Hawai'i Department of Forestry and Wildlife, Forest Solutions. It is not uncommon for student interns to be supervised by

individuals who have graduated from the HawCC Forest TEAM program. Students participating in the internship program can earn up to six (6) internship credits that are applied to the TEAM degree requirements. They are required to do at least one internship credit before receiving their A.S. degree.

The TEAM program also academically prepares students who wish to continue their degree at a four-year institution. HawCC's TEAM program works collaboratively with UH Hilo College of Agriculture, Forestry and Natural Resource Management and with the UHH Biology Department's Ecology, Evolution and Conservation Biology program.

By the time students have completed the Forest TEAM program at HawCC they will have gained a basic understanding of forest ecosystem management and use of GPS and GIS to conduct surveys and use the mapped data in management decisions.

TEAM graduates at HawCC are prepared with knowledge and skills for entry-level positions in the fields of plant propagation, forest restoration, forest surveying, agroforestry, and use of GIS in decision making and management.

#### PROGRAM GOAL

The goal of the Forest TEAM program is to educate students to supply the workforce needs for Ecosystem Management Technicians by government agencies and private businesses, or to start their own business. The program combines hands-on field courses with advanced technology

using computers, Global Positioning Systems (GPS), Geographic Information Systems (GIS), digital surveying instruments

and digital environmental monitoring instruments. Students gain applied knowledge through field laboratories and internships and advanced technological skills in the computer classroom.

# **OBJECTIVES**

The following objectives articulate the primary goal and the major functions of the program:

- To provide education and training to students preparing themselves for careers forest ecosystem management, agroforestry, and related businesses, or to start their own businesses.
- To prepare those students who expect to go on to four-year and graduate degrees by offering necessary coursework supplemented with skill building that will allow them to compete successfully at an advanced level;

# A. Program Demand/Centrality: Fall 2006

INDICES	MINIMUM	ACTUAL LEVEL	SATISFACTORY
	LEVEL		LEVEL
1. Number of Applicants	20	31	30
2. Number of Majors	15	35	30
3. Student Semester Hours	120	139	276
4. Class Credit Hours	16	17.4	21
5. Number of Classes Taught	7	8	9

# **B. Program Efficiency: Fall 2006**

Indices	MINIMUM	ACTUAL LEVEL	SATISFACTORY
	LEVEL		LEVEL
Average Class Size (Enroll/no of classes	8	8	15
Student Semester Hours per FTE Faculty	100	99	190
Equiv. Class Credit Hours per FTE Faculty	12	12.4	15
Percentage of Small Classes (<10)	100%	57%	0%

# 2005-2006 PERKINS III CORE INDICATORS

	# in	# in	Adjusted	Actual
<b>Core Indicators</b>	Denominator	Numerator	Level	Level
Academic Achievement	6	6	81.92%	100%
Vocational Skills	6	5	90.00%	83.33%
Degrees & Certificates	6	3	37.33%	50.00%
Placement/Employment	3	2	71.72%	66.67%
Retention/Employment	2	2	92.00%	100.00%
Nontraditional Participation	21	11	14.60%	50.00%
Nontraditional Completion	5	2	12.73%	40.00%

# **OCCUPATIONAL DEMAND**

## ANALYSIS OF THE PROGRAM

The program has demonstrated the following with regard to demand efficiency and outcome measures:

### **Program Demand/Centrality**

There were significant increases in the number of applicants between 2001 and 2006. This was because the program began in 2001/02 with 6 students. By fall 2006, there were 35 declared majors in the program. During this period there was also an increase in the number of applicants.

The Forest TEAM program is contributing to the larger needs in the State of Hawai'i for a trained workforce able to manage and restore large areas of native forest. A state-wide workforce study conducted in 2005 found that in the farming, fishing and forestry occupations, there were 962 jobs available state-wide and 581 available on the Island of Hawai'i. The study projected that in the six years from 2005 to 2011, there will be 48 new positions and 61 replacement positions on Hawai'i. Forest TEAM has graduated a total of 21 students with the AS degree in the past 6 years who are qualified Ecosystem Management Technicians with specialized knowledge that allows them to both supply the workforce needs and also to influence the direction of future ecosystem management programs. Six of the ten students who graduated from the program received jobs, and three of these students are now working with recruitment and mentoring of Forest TEAM and secondary school students. Ten of the graduates continued in four-year colleges. Five additional students expect to graduate in May, 2007.

### **Program Efficiency**

The Forest TEAM program is continuing to work to improve its program efficiency. In fall 2006, the average TEAM class size was eight (8) students for the seven (7) classes taught that term. The SSH per FTE faculty was 99, which was slightly below the minimum level. The TEAM program is actively recruiting students, and the number of majors is increasing over time, although it has remained constant for the past year. Two student assistants have been employed through federal grant funds to work on recruitment and retention of students; one of the student assistants is mentoring TEAM majors who need to complete remedial math and English classes, and the other assistant is working with interested high school students. During the 2006—2007 school year, Forest TEAM faculty and students have visited over 30 classes at 10 schools on the Big Island to present information about the program and to conduct GPS workshops. They have also sponsored two open houses on the Manono campus, with 100 to 300 visitors to each. Booths with posters and brochures were set up at two island-wide career pathways fairs, with 10—12 schools and 300—400 students at each career fair, at Earth Day (with garden tours for 10 schools with 100-200 students), at 3 Napua Noea'u Super Saturdays (20-30 students each), at the

Dryland Forest Conference and the Sustainable Communities Conference in Kona (200 attendees each). Two courses were offered to 13 high-school students in June and July 2006; Hawaiian Natural History and GPS/GIS. As a result, a Junior Forest TEAM club was formed with 8 secondary school members. These courses will be repeated in summer 2007. Credit in these courses can be transferred toward secondary school graduation. Forest TEAM also had posters, brochures and presentations at the Building Bridges workshops for high school guidance counselors. They have also had posters and brochures and Career Days at the Prince Kuhio mall. Program brochures are being mailed each year to every public and private secondary school state-wide. Finally, Forest TEAM faculty are participating as members of the Advisory Board of the Department of Education's Natural Resources Career Pathways program, helping to design the NRCP curriculum and to work with high school teachers who are implementing the program. During Fall 2006 the TEAM program sent the Agroforestry course to the West Hawaii Campus using Polycom cameras in the classrooms and on-line computers. The class had 3 students. Three courses will be sent to West Hawaii in Fall of 2007.

## **Program Outcomes**

In the core standard areas, actual performance of TEAM students was higher than the adjusted level in five out of the seven categories. The other two categories had percentages equivalent to the adjusted level if the low student numbers are taken into consideration. Of the four students who graduated with the A.S. degree in 2003, three received employment in the field, and all are continuing in their jobs (75% placement and 100% retention). Four students received the A.S. degree in 2004, and three received employment in the field and all are continuing (75% placement, 100% retention). One of these students is completing a four year degree. In 2005, two students received the A.S. degree, and both are continuing their four year degrees. During 2006, eleven TEAM students received the A.S. degree; seven in May and four in December. Sixty four percent of the 2006 graduates were female, forty five percent Hawaiian, and thirty percent other minority groups. Sixty four percent are continuing with a four-year degree program and twenty percent have jobs in the field.

### **Plan of Action**

- Continue and expand recruiting through brochure mailings to all public and private schools statewide. Continute to participate in career fairs at local high schools and in the Career Pathways career fairs held in Hilo each year. Continue to visit classes of high school teachers in agriculture and natural resources. Offer two summer Explorations classes to high school students.
- Continue to extend work with the Natural Resources Career Pathways program, targeting teachers on Big Island schools who are participating in the program.
- Send additional applied TEAM distance education classes to the West Hawai`i campus.
- ✤ Up-date the TEAM web site.

- Work with the Advisory Board to continue adapting and revising the program to meet the needs of the employers.
- Continue to work with federal and state agencies and private businesses on service learning and the internship program to enhance employment opportunities in the conservation, agroforestry and forest ecosystem management fields.
- Continue to review and revise Forest TEAM courses and the degree requirements to determine whether they are meeting the needs of the students and employers.
- Complete the articulation of TEAM courses with UH Hilo and Oregon State University School of Forestry.

## **Response to the Previous Year Plan of Action**

- ✤ Recruitment: See above under Program Efficiency
- Extend work with the Natural Resources Career Pathways program, targeting teachers on Big Island schools who are participating in the program.
   Forest TEAM is working with teachers at Waiakea High School on this.
- Send additional applied TEAM distance education classes to the West Hawai`i campus.
  1 course was sent to the West Hawai`I campus in fall, 2006.
- Up-date the TEAM web site.
  Still on the "to-do" list.
- Work with the Advisory Board to continue adapting and revising the program to meet the needs of the employers.

The Advisory Board, composed of 22 representatives of federal and state agencies, private businesses, non-profit conservation groups, and other UH colleges met twice in the past year to discuss and advise how the program can continue to change and adapt.

- Continue to work with federal and state agencies and private businesses on service learning and the internship program to enhance employment opportunities in the conservation, agroforestry and forest ecosystem management fields.
  During the past year, Forest TEAM student interns worked closely with the State Department of Forestry and Wildlife to survey the Kapapala Koa Canoe Forest. Additional interns worked with the HIP program and Hawaii Volcanoes National Park. Numerous service learning trips were carried out with federal and state agencies during the past year.
- Continue to review and revise Forest TEAM courses and the degree requirements to determine whether they are meeting the needs of the students and employers. Two courses are being offered as experimental courses in fall, 2007; Computer Applications and Introductory Surveying. These are replacing ICS 101 and Math 120, and are being designed to include more applied material and more hands-on field applications.
- Complete the articulation of TEAM courses with UH Hilo and UH Manoa. Meetings have been held with UH Hilo during the past year, and an draft articulation agreement has been completed and is expected to be finalized during spring, 2007. Articulation with UH Manoa has not made progress in the past year. However, meetings are

underway with Oregon State University and an articulation agreement is expected to be completed in spring 2007.

#### **Appendix A: History and Admission Requirements**

#### **PROGRAM HISTORY**

The Forest TEAM program was started in Fall, 2000. The program received Board of Regents approval to confer the C.A. certificate and the A.S. degree in April, 2002. The first CA certificates were conferred May, 2002, and the first students graduated with A.S. degrees in May, 2003. Permanent status for the TEAM program was granted by the B.O.R. in October, 2005.

State of Hawai`i workforce studies in the 1990's targeted forest and conservation workers as an area that had a large potential need and lacked in-state training programs. A Secretariat of Conservation

Biology workshop in 1997 brought together representatives of federal and state agencies, private businesses, and the University of Hawai'i. The agencies and businesses named the lack of a trained workforce as their primary need. In response, the State of Hawai'i Department of Labor's Workforce Development office and the Hawai'i Community Forestry Initiative provided seed money to Hawai'i Community College to develop a grant proposal to the NSF/ATE program.

In Nov. 1998, the State Workforce Development office funded a three-day workshop including over twenty agencies and businesses at Hawai'i CC to Develop a Curriculum (DACUM) for the new program. A professional DACUM facilitator worked with the group to identify the specific skills the employers needed in the new technicians, and a course matrix was developed.

Following two years of preliminary proposals, the ATE program funded a three-year grant to Hawai'i CC in July, 2000. The first year of the grant was spent on infrastructure development. With assistance

from a twenty member Advisory Board, fourteen new courses were developed and placed in the catalogue, a new A.S. degree program was planned, a new computer classroom set up and the equipment ordered. The first students entered the program in fall, 2001 with a full complement of courses. After the first year of classes, six students completed internships in the summer of 2002. The University of Hawai`i

Board of Regents approved the Forest TEAM A.S. program in April, 2002 and the first five students received their degrees in May 2003. The second group of three students received the A.S. degree in May, 2004, while two additional students finished the A.S. degree while they continued their four year degree in fall 2004. Two students received the A.S. degree in May, 2005, and five students received the C.A. Seven students received the A.S. and C.A. in May 2006 and four more in December 2006. A total of twenty one students have completed their A.S. degrees during the past six years

Of these twenty one graduates, two have completed their four-year degrees and eight are currently in four-year degree programs. Three graduates are currently working with the TEAM program on recruiting, grant administration and greenhouse management. Ten have received full-time jobs in the field of their study.

The TEAM program hired it's first full-time faculty member in spring, 2004. This faculty member resigned in spring, 2006, and a replacement was hired and began teaching in spring 2007. A second faculty member was hired in fall, 2006 to work part time with the TEAM program and part time with the Math and Natural Science department.

#### **Contributions to Education and Human Resources:**

Prior to development of the Forest TEAM program, there was no two-year program in Hawaii or the Tropical Pacific to train field technicians with knowledge of native ecosystems and with GPS/GIS and computer skills. We have therefore contributing a new category of employee to the Hawaiian job market.

Since no job listings in the State included A.S. degree, it was necessary to work with the Forest TEAM Advisory Board and the State Workforce Development Office to convince employers to include this category. The Forest TEAM internship program has been instrumental in convincing potential employers of the advantages of hiring Forest Ecosystem Management students.

Three primary obstacles have caused lower than expected numbers of students in the Forest TEAM program. First, the Island of Hawai'i has a tradition-oriented culture. Students tend to follow career

paths recommended to them by friends and relatives. It takes time for a new career pathway to build a reputation (and to satisfy potential students that they will get jobs). Second, the Islands are

geographically scattered, and students find it difficult to move to another island (or even to move from Leeward to Windward Hawai'i) to attend college. A third obstacle is under-preparation of high school

graduates in English and mathematics.

The first obstacle is being overcome by the success of the Forest TEAM program in training high-quality Forest Ecosystem Management technicians who are in high demand by the employers. Aggressive outreach and promotion of the program is also having an impact. From an initial four students entering the first year of the program, there were by the sixth year, thirty five students declaring a Forest TEAM major. About half of these students are completing remedial math and English courses so they can enter the program classes.

The second obstacle is being resolved by offering Forest TEAM courses to other community colleges throughout the Hawaiian islands. We began offering the first distance education classes to Kaua'i CC

in Fall, 2004 with support from the ATE grant. Applied field classes are difficult to teach online, so we used a hybrid polycom/on-line approach. An instructor at Kaua`i CC was present in the distance education classroom, and conducted the field laboratories. Hawai`i CC instructors travelled to Kaua`i three to five times each term to work directly with the Kaua`i students and staff. In Fall, 2006, the program was turned over to Kaua`i CC, but they decided to not continue the program due to low enrollment (3 to 5 students per class, and one TEAM major). Hawai`i CC is currently expanding the program to the West Hawai`i Campus, with one class taught Fall 2006 via Polycom and three on-line classes planned for fall 2007. So far, three students have taken the course at West Hawaii, and we are actively recruiting to increase the enrollment in fall, 2007.

The third major obstacle, under-preparation of high-school students, is also the most serious and the hardest to overcome. We are using a two-pronged strategy to reach solutions. First, students

entering Hawai'i CC take a Compass test. Those testing into lower than college level math and English are required to take remedial courses. Beginning in fall, 2005, these students have had the opportunity to

work with student tutors to help them improve these basic skills. Second, we are working with the Hawai`i Department of Education's Natural Resources Career Pathways program. High school students will be able to begin preparing in ninth and tenth grade to enter this career. This will allow them to take the skills courses they need for success. In addition, Forest TEAM has offered summer courses for high school students for the past two years, and will continue these courses in 2007. A Junior Forest TEAM Club is successfully engaging high school students in TEAM service learning activities.

# PROGRAM ADMISSION REQUIREMENTS

There are currently no entry requirements for the Forest TEAM program. However, minimum entry requirements for the 100 level program courses are: Completion of Eng 21 with C or better or placement in Eng 102, completion of Eng 22 with C or better or placement in Eng 100, completion of Math 25X or 26 with C or better or placement in Math 100.

# **Appendix B: Degree Requirements**

First Semester	AS
*ICS 101 Microcomputer Applications	4
Math 120 Trigonometry for Surveying	4
*Eng 102 College Reading	3
Ag 175/175L Agroforestry/Agroforestry laboratory	4
TOTAL	15
Second Semester †	
Geog 170/170L Forest Surveying	4
*Eng 100 Expository Writing	3
Biol 156/156L Hawaiian Natural History	4
*Hawst 125 Hawaiian plants & their uses	3
*Chem 100 Chemistry	3
TOTAL	17
Third Semester †	
Ag 190V Internship	1-3
Geog 180/180L Geographic Information Systems	4
*Biol 101/101L OR Bot 101/101L OR Zool 101/101L	4
Ag 130 Agroforestry Business Management	3
*Sci 124/124L Environmental Science	4
TOTAL	16-18
Fourth Semester †	
Ag 245/245L Silviculture	4
Ag 275/275L Forest Pest Management	4
Ag 291 Forest Ecosystem Management	3
*SpCo 151 Intro to Speech & Comm	3
TOTAL	14
TOTAL	62-64

\* These general education courses may be taken in other terms

Additional RequirementsEarn a "C" or better in all courses.

Regular Faculty Name	Tenure Status and o	late	Degre	es Held	Rank
Fred Stone	Tenured 1995. Retire	B.S., 1 d 2005.	M.S., Pł workin	n.D. g part time on TEAM	5 (Prof.) grant
administration	U. 15 11 2007			or the second	1
Pamela Scheffler Orlo Steele	Hired Fall 2006 Hired Spring 2007	B.A, F 2 B.A	<sup>2</sup> h.D. , M.S,	Ph.D.	1
Part-time Faculty Name	Tenure Status and o	late	Degre	es Held	
Allie Atkinson	Lecturer		B.S.		
Mick Castillo	Lecturer, Casual Hire	e	B.S., N	M.S.	
Talena Adams	Lecturer		A.S., I	B.A.	
Ferrell, James	Lecturer		B.S., N	M.S.	
Benitez, David	Lecturer		B.A.		
Reese, Libby	Lecturer		B.S., N	M.S	
Edson, John	Casual Hire		B.S., N	M.S.	
Weatherford, James	Lecturer		B.S, M	1.S, Ph.D.	

#### **Appendix D: Advisory Committee**

#### TROPICAL FOREST ECOSYSTEM AND AGROFORESTRY MANAGEMENT ADVISORY BOARD Spring, 2007

Dr. Paul Banko: U.S. Geological Survey

Pacific Island Ecosystems Research Center P.O. Box 44, Building 344 Hawai'i Volcanoes National Park, HI 96718 808-967-7396 ext. 235 FAX 808-967-8568 paul banko@usgs.gov

Ms. Laura Nelson

The Nature Conservancy of Hawai'i P.O. Box 6600 Kamuela, HI 96743 808-885-1786, cell 808-640-3614 Laura nelson@tnc.org

Dr. J.B. Friday: Extension Forester, Cooperative Extension Service UH College of Tropical Agriculture & Human Resources 875 Komohana St Hilo, HI 96720 808-981-5199 jbfriday@hawaii.edu

Ms. Katie S. Friday: Associate Pacific Islands Forester

USDA Forest Service, Institute of Pacific Island Forestry 23 E. Kawili Avenue Hilo, HI 96720 808-933-8121 ext 14 FAX 808-933-8120 kfriday@fs.fed.us

Ms. Lisa Hadway

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## Appendix E: Definitions of Data Elements (All data includes West Hawai'i)

### A. Program Demand/Centrality:

- 1. <u>Number of Applications</u>: Total number of applications received complete and incomplete.
- 2. <u>Number of Majors</u>: Major declared/on file during the semester.
- 3. <u>Student Semester Hours</u>: Total number of semester hours based upon class credits and student enrollment. Sum of all class credits multiplied by the enrollment for each class. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes cancelled, 99V, 199V, 299V, and all CVE classes.
- 4. <u>Class Credit Hours</u>: Sum of credits of all classes offered within the program/with the program/major code/alpha. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes cancelled, 99V, 199V, 299V, and all CVE classes.
- 5. <u>Number of Classes Taught</u>: Total number of classes conducted/run within the program/with the program/major code/alpha. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 1 99V, 299V, and all CVE classes.

## **B. Program Efficiency:**

- <u>Average Class Size</u>: Average class size of all classes conducted/run within the program/with the program/major code/alpha. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 199V, 299V, and all CVE courses. Total enrollment in each class excludes students with "DR" and/or "W" grades.
- 2. <u>Student Semester Hours per FTE Faculty</u>: Total student semester hours from A.3. divided by analytical FTE Faculty.
- a. <u>Analytical FTE Faculty</u>: Teaching based upon a full load (15 or 12 credits depending upon the contact hours.) Division Chairpersons are assigned an analytical FTE Faculty equivalent of 0.70 FTE.
- b. Each full-time faculty within a program is considered to be 1 FTE. FTE based upon lecturers are calculated by the number of credits each are assigned to teach.
- c. Assigned time is to be extracted from FTE calculations... similar to calculating the FTE for a Division Chair. For example, if a Full-time faculty received 3 credits assigned time (out of a regular 15-credit load) it would be considered a .8 FTE rather than 1.

- 3. <u>Equivalent Class Credit Hours per FTE Faculty</u>: Total class credit hours from A.4. divided by total analytical FTE Faculty.
- 4. <u>Percentage of Small Classes</u>: Percent of classes within the program/with the program/major code/alpha that had less than 10 students. Includes practica and other classes where 5 students = 1 semester (credit) hour; however, these classes are considered to be Low-enrolled only if there are less than 5 students or between 6 and 9 students. Excludes 99V, 199V, 299V, and all CVE classes.

# **C. Program Outcomes:**

- <u>Credits Earned Ratio (General Education)</u>: Percentage of program majors enrolled in all LBART courses (excluding those in C.1.) who passed with a grade of A, B, C, D or CR. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 199V, 299V, and all CVE courses.
- 2. <u>Credits Earned Ratio (Vocational Education)</u>: Percentage of students enrolled in vocational courses who passed with a grade of A, B, C, D or CR. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 199V, 299V, and all CVE courses.
- 3. Degrees and Certificates Awarded: Degrees awarded in previous year (2005-06)
- 4. <u>Retention Rate</u>: New students within a program/major continuing or retained in that program/major from the past two or more terms. (Students registered in Fall 2005 who started in Spring 2006 or Fall 2006. \???
- 5. Retention in Employment for previous year: (2005-06) Perkins III
- 6. Non-traditional participation: Females (2005-06) Perkins III
- 7. Non-traditional Program Completion for previous year (2005-06) Perkins III